

RESEARCH AND DEVELOPMENT, NEUCHATEL - QUARTERLY REPORT

DIVISION : RESEARCH
SUBJECT TITLE : MICROBIOLOGICAL METHODS
PERIOD COVERED : April - June 1990
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KEYWORDS : bacteria, spore, method, count,
pasteurisation, statistic

OBJECTIVE

Review our traditional plate count method used to quantify the tobacco bacterial population.
Evaluate statistically the impact of individual steps on final count.
Change method conditions when necessary.

STATUS

The impact of extraction, pasteurisation, inoculation and incubation conditions on total count have been re-evaluated. Special emphasis has been placed on the pasteurisation step which determines spore proportion in the bacterial population.

RESULTS

The global statistical analysis of all the results obtained in this study shows that variation of results can be explained (92%) by the parameters involved [1].
For the total count, agitation speed during tobacco extraction (Fig. 1) and the nature of the incubation medium (Fig. 2) are the most important parameters involved in result variations. For spore evaluation, pasteurisation conditions (temperature and time) are found to be predominant.
Remaining variations can be attributed to the tobacco itself and can be reduced by increasing the number of analyses.

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CONCLUSIONS

Based on results, the method is modified as follows:

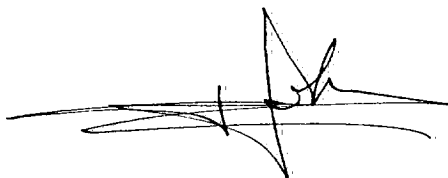
- Agitation speed during extraction is increased from 220 to 280 rpm.
- The nutrient agar medium is replaced by the TSA (Trypticase Soya Agar) medium.
- Pasteurisation conditions are changed from 78°C/12 min. to 70°C/30 min.
- The number of analyses per sample is increased from 3 to 5.

PLANS

Prepare a final report including all results and statistical evaluations.

REFERENCE

- [1] Reports from Wong-Y. to Morel-P., April-June 1990.

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Figure 1 : EFFECT OF AGITATION SPEED ON TOTAL BACTERIAL COUNT DURING TOBACCO EXTRACTION

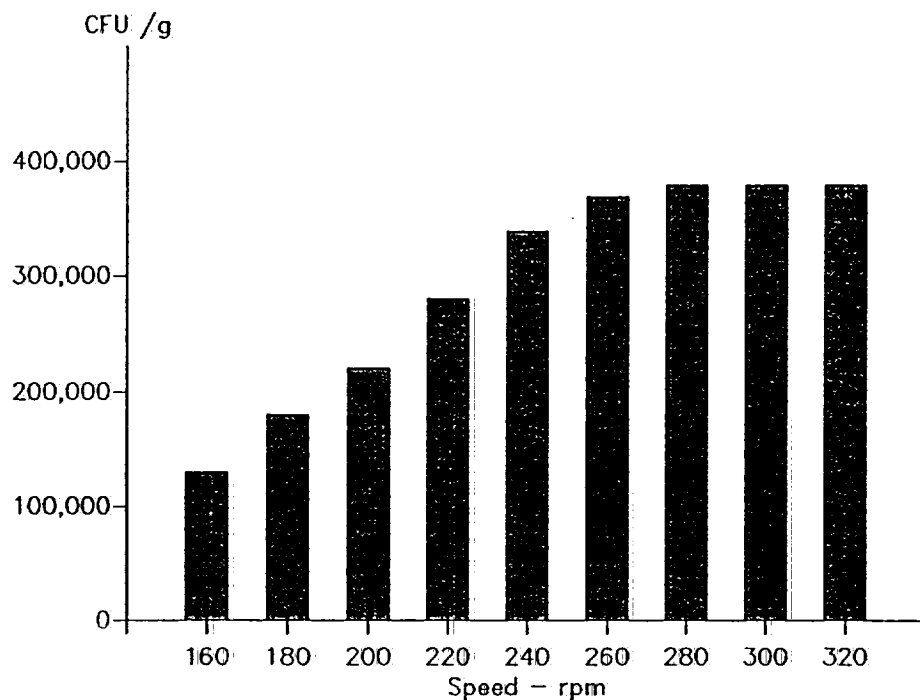
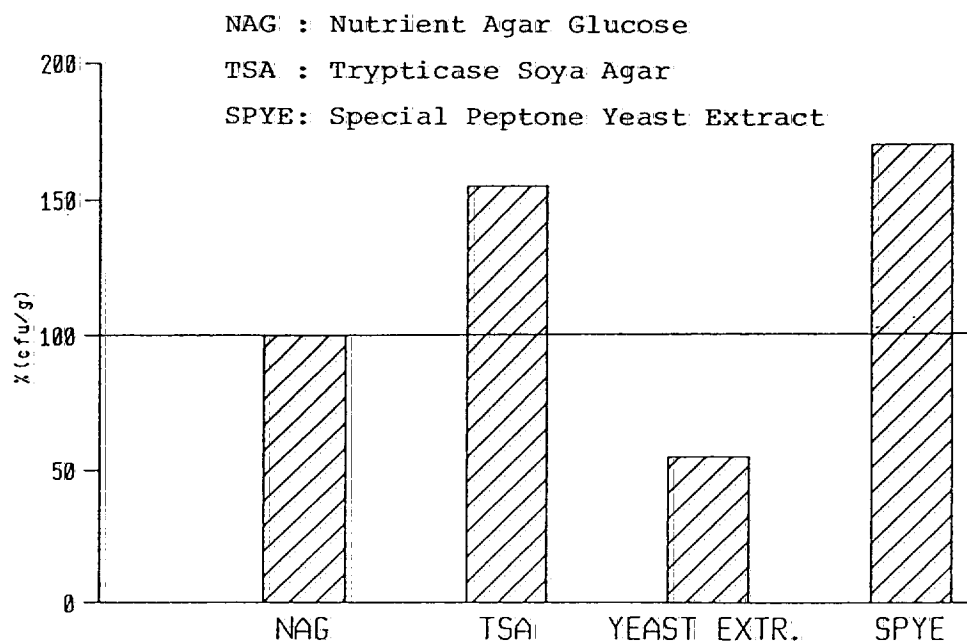


Figure 2 : INFLUENCE OF INCUBATION MEDIA ON TOTAL COUNT



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